Perchlorate Summary / Whittaker-Bermite Facility

9/30/97

Draft Remedial Investigation Report, January 1997

Facility: Whittaker Corporation, Bermite facility
Location: 22116 West Soledad Canyon Road, Santa Clarita, CA
Latitude: 34°24'51.9" N
Longitude: 118°31'20.5" W
Handler ID: CAD064573108
Enforcement: DTSC Consent Order, Docket HSA-94/95-012 (November 21, 1994)
Permit Status: Interim Status

History (page 1-4):

1967-1987	Whittaker-Bermite	Ammunition rounds, detonators, fuses, boosters, flares/signal cartridges, glow plugs, tracer and pyrophoric pellets, igniters, explosive bolts, rocket motors, gas generators, missile main charges
1942-1967	Bermite Powder Company	Flares, detonators, fuses, boosters, coated magnesium, stabilized red phosphorus
1936-1942	Halifax Explosives Company	Fireworks Production/Oil Field Explosives
1934-1936	Los Angeles Powder Company	Dynamite Manufacturing

Perchlorates Identified in Aqueous Waste Streams (page 2-16):

Ammunition neutralized solution	perchlorates, polyvinyl acetate
Rocket chamber hog-out/washout water	ammonium perchlorate, methylene chloride

2 surface impoundments; total capacity 100,000 gallons

Ignitable Wastes (page 2-17)

2 Open-air burn areas (RCRA-11); approx. 25 yds^3 each
Burn Cage, Pans, Rails (RCRA-10)

Detonable Wastes (page 2-18)

East Fork Detonation Range (RCRA-12)

Chemical and Waste Summary by Product Category (Table 2-7)

Ammunition Rounds: 20, 30 mm cartridges	Potassium perchlorate
Flares and Signal Cartridges	Potassium perchlorate
Glow Plugs and Tracer and Pyrophoric Pellets	Potassium perchlorate
Igniters, Ignition Compositions, Explosive Bolts	Potassium perchlorate

Power Charges	Potassium perchlorate
Rocket Motors and Gas Generators	Ammonium, Potassium perchlorate Ammonium perchlorate water

Chemical List by Manufacturing Process (Table 2-9)

Assembly	Ammonium, potassium perchlorate
Chemical Storage, Magazines, Cure Ovens	Ammonium, potassium perchlorate
Laboratories	Ammonium perchlorate
Mixing, Blending, Grinding	Ammonium, potassium perchlorate
Parts Cleaning	Ammonium perchlorate
Pressing, Loading, Casting	Ammonium, potassium perchlorate
Product Testing	Ammonium, potassium perchlorate

Summary of Known Release Locations (Table 2-12)

Area	Description	Material Released
1	317 Impoundment	TCE
RCRA-2	Building 207 (lead azide)	Lead
RCRA-10	Burn Cage, Pans, and Rails	Metals
RCRA-11	Burn Area (2)	Metals
RCRA-12	East Fork Detonation Range	Barium

Area 1, the 317 Impoundment, was a Hypalon-lined pond utilized to collect and store aqueous waste generated by on-site manufacturing operations, pending shipment for off-site disposal. The surface impoundment was approximately 50 by 50 feet, with an operational depth of 2-3 feet, for a volume of about 30,000 gallons. The surface impoundment was used from the early 70's to March 1983, when all liquid and residue were removed, followed by removal of the liner. The surface impoundment was replaced with above-ground storage tanks and secondary containment. During the period of operation, the impoundment was a permitted hazardous waste storage facility under RCRA. The impoundment is subject to the requirements of the Post-Closure Plan, dated May 26, 1981, and updated December 27, 1987.

The 317 Impoundment was used to hold wastewater generated by the Sidewinder rocket chamber washout operation in building 317. An undated waste manifest, apparently from the early 1980's, characterizes the washout water as having the following composition:

Constituent	Percent
Water	98
Ammonium perchlorate	1
Polybutadiene rubber	<1
Aluminum oxide	<1
Aluminum	<1

Paint residue	<1
Spent paint stripper	<1

RCRA-2, located in Building 207, was a lead azide wash water treatment system which was clean-closed. There is no indication from the report that perchlorate was used in or near this building.

RCRA-10, the Burn Cage, Pans, and Rails area, was used, with RCRA-11, to burn approximately 600 pounds of waste material each week. Waste included dry paper, gloves, off-specification flare mix, rocket propellant, and BP-1 powders. This unit was excavated and clean-closed. The unit was sampled for a range of organic and inorganic constituents. However, there is no indication from the analytical results (Tables 3-40A through 3-40F) that ammonium or potassium perchlorate were analyzed.

RCRA-11, the Burn Area, consisted of two burn pits in close proximity. This unit, along with RCRA-10, was used to burn approximately 600 pounds of waste per week. Waste included dry paper, gloves, off-specification flare mix, rocket propellant, and BP-1 powders. This unit was excavated and clean-closed. The unit was sampled for a range of organic and inorganic constituents. However, there is no indication from the analytical results (Tables 3-41A through 3-41F) that ammonium or potassium perchlorate were analyzed.

RCRA-12, the East Fork Detonation Range, consisted of an open area approximately 50 feet long by 20 feet wide where aged or off-specification components were detonated. This unit was excavated and clean-closed. The unit was sampled for a range of organic and inorganic constituents. However, there is no indication from the analytical results (Tables 3-41A through 3-41F) that ammonium or potassium perchlorate were analyzed.

Hydrogeology (Sect. 5.7)

First groundwater beneath the Bermite facility reportedly occurs in confined and unconfined conditions southwest and northeast of the San Gabriel fault zone, respectively. The San Gabriel fault zone reportedly provides hydrogeologic control (i.e., a barrier) separating the two groundwater units in elevation and characteristics. Unconfined groundwater northeast of the SG fault is found in shallow alluvium at approximately 30 feet below ground surface. Confined groundwater, southwest of the SG fault, is found at depths ranging from 460 to 675 feet bgs, in the Saugus Formation. The Saugus formation is characterized by continental sediments consisting of channel, lacustrine, floodplain, and alluvial fan deposits of conglomerates, fine- to coarse-grained sandstones, siltstones, and claystones. Total dissolved solids concentrations range from 410 to 1800 mg/l; chloride is high (3210 mg/l), and the aquifer may have been affected by historical oil-field and production wastes, due to re-injection of briny wastewater.

Twenty-two water supply wells have been installed within the Saugus aquifer in the region, all reportedly in the confined water-bearing unit. Regional groundwater flow in the confined unit is

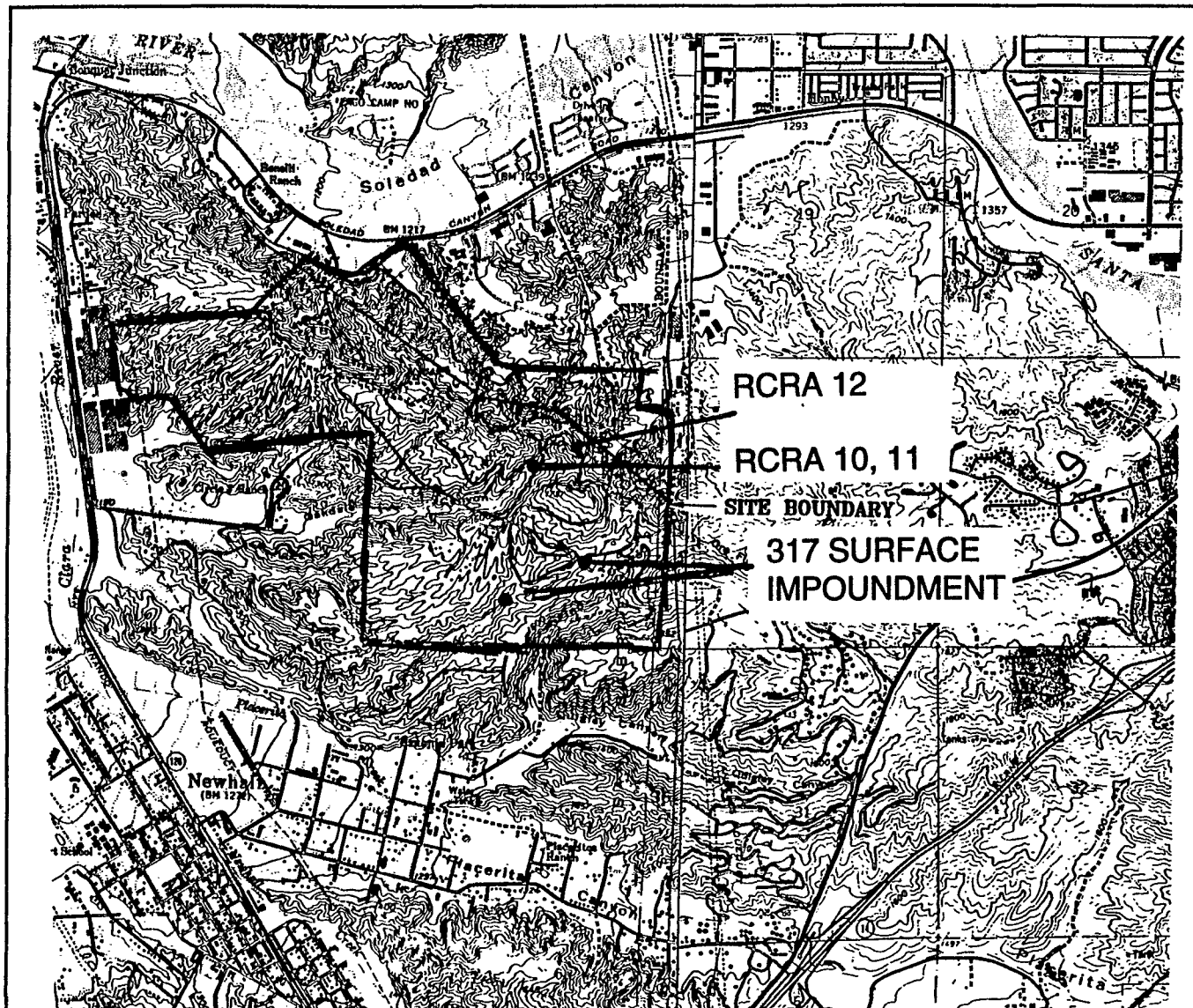
to the northwest. Between 8 and 10 municipal water wells utilize the Saugus Formation aquifer for public water supply. These wells are located northwest of Newhall; average total production is approximately 4600 acre-feet per year. Wells in Newhall, Santa Clarita, and Valencia were analyzed for perchlorate in 1997. Due to levels of perchlorate exceeding the 18 ug/l standard, two wells in Santa Clarita (Saugus 1 / 2) and one well in Newhall (Newhall No. 11) were shut down.

The water quality from the existing site industrial water supply well (Bldg 69 / Ranch House Well) for the Bermite facility is consistent with the general water quality (TDS, chlorides) in the area, based on historical testing of the regional wells. This well was sampled in 1985, and found to contain 1,1-DCE, carbon tetrachloride, chloroform, 1,2-DCA, and TCE. This well was sampled for perchlorate in 1997, and found to contain 27 ug/l. This well is an industrial supply well, and not used for drinking water.

Area 1, the 317 Impoundment, currently has five groundwater monitoring wells (figure 3-5). All the wells have 20-foot screens, ranging from 630 to 700 feet bgs. There is no information available on wells associated with the burn areas (RCRA 10, 11, 12). Groundwater flow ranges from north to northeast (1993). However, during the drought, groundwater flow was to the northwest, and regional flow is reported to be to the northwest. The hydraulic gradient ranges from 0.0025 to 0.0063, and depth to groundwater is typically 400 to 600 feet. The five wells associated with the 317 impoundment (MW-1, 3, 5, 6, and 10) were sampled for perchlorate in 1997; all were non-detect.

Conclusions

Historical information available for the Whittaker-Bermite facility indicates that ammonium and potassium perchlorate were used extensively. Ammonium perchlorate in solution (1%) was present in a wastewater impoundment (317 Impoundment). Recent data indicates that at least one on-site well (Bldg 69 / Ranch House Well) contains perchlorate. DTSC has identified several other potential sources of perchlorate in the vicinity, and is continuing to investigate the nature and extent of perchlorate contamination in soil and groundwater on- and off-site.



EXPLANATION:

SITE LOCATION BOUNDARY

GENERAL NOTES:

Base Map from U.S.G.S.
MINT CANYON, AND NEWHALL CALIFORNIA
7.5 Minute Topographic
Quadrangle
Photorevised 1988

QUADRANGLE LOCATION

NOTE: ALL DIMENSIONS AND LOCATIONS ARE APPROXIMATE

0 2,000 4,000
Scale
(feet)

FIGURE 1-1
SITE LOCATION MAP
WHITTAKER CORPORATION, BERMITE FACILITY
22116 WEST SOLEDAD CANYON ROAD
SANTA CLARITA, CALIFORNIA

Project No. 21001.85	Drawn DWR
File No. RR1-1SLM	Prepared PHB
Revision 0	Reviewed

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Consulting Scientists, Engineers, and Geolog
4511 Golden Foothill Parkway,
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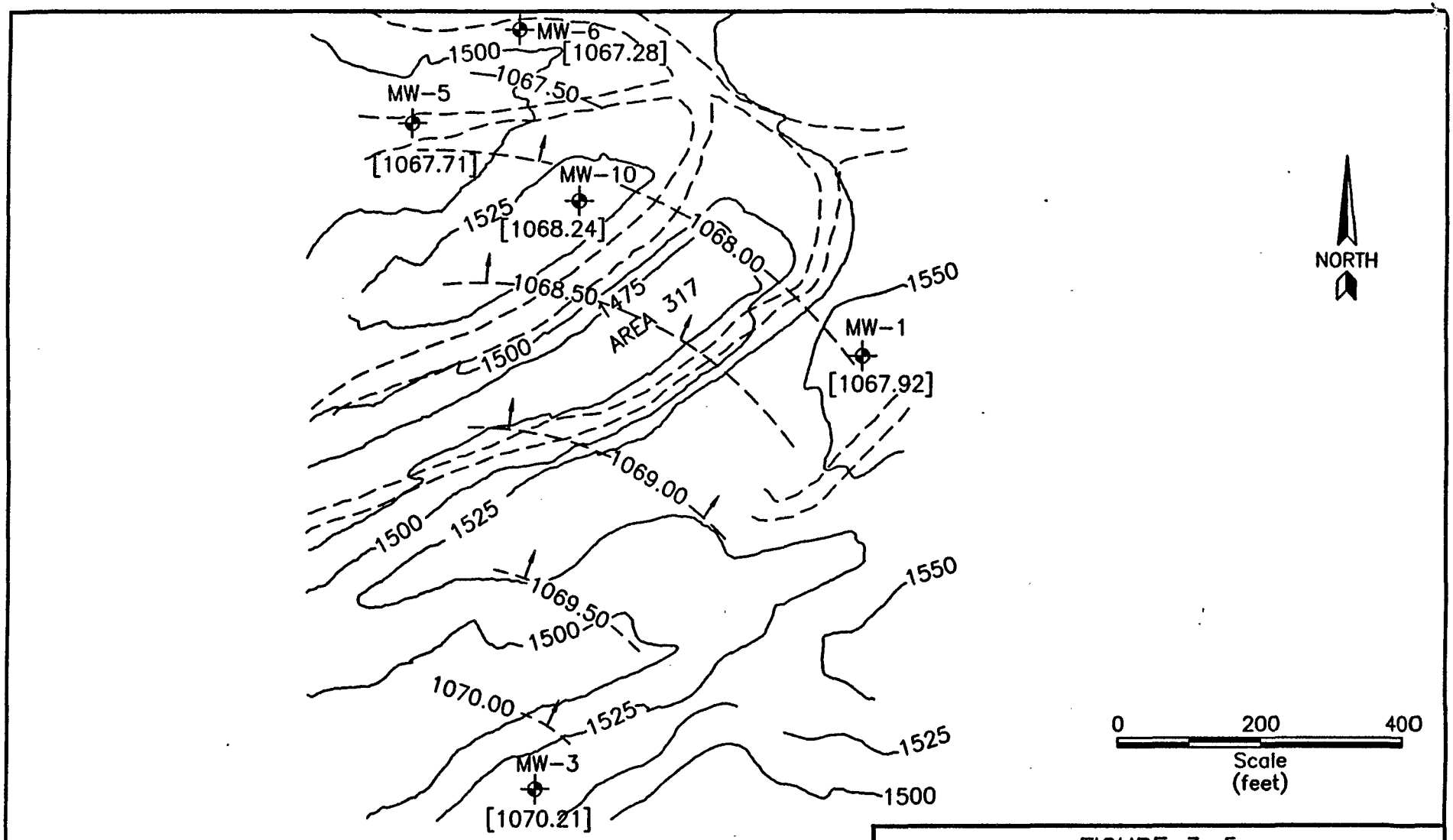

LEGEND

⊕ MW-1	MONITORING WELL LOCATION
1067.92	GROUND WATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
1068.00	ESTIMATED GROUND WATER CONTOUR (FEET ABOVE MEAN SEA LEVEL) WITH ARROW INDICATING INFERRED DIRECTION OF GROUND WATER FLOW

FIGURE 3-5

AREA 317 GROUND WATER MONITORING WELL LOCATIONS AND ESTIMATED GROUND WATER FLOW DIRECTION (09/17/96)

WHITTAKER CORPORATION, BERMITE FACILITY
22116 WEST SOLEDAD CANYON ROAD,
SANTA CLARITA, CALIFORNIA

Project No. 21001.75	Drawn JDH	Acton • Mickelson • Environmental, Inc.
File No. RR3-05	Prepared 11/11/96 LGP	Consulting Scientists, Engineers, and Geologists
Revision 0	Reviewed	4511 Golden Foothill Parkway, #1 El Dorado Hills, California 95762 (916) 939-7550

Santa Clarita Area Perchlorate Sampling

Utility Name	System Number	Sample Date	Sample Source	Primary Station Code	Latitude	Longitude	City	Sample Type	Perchlorate Results (µg/L)	Comments
Newhall CWD	1910096	6/3/97	25333 San Fernando Rd.	NA	NA	NA	Santa Clarita	Chlorinated DW	ND	Sampled at 1st service connection to Well #11
Newhall CWD	1910096	5/1/97	Well No. 11	03N/16W-27J03 S	342300.0	1183300.0	Santa Clarita	Raw GW	19	
Newhall CWD	1910096	5/22/97	Well No. 11	03N/16W-27J03 S	342300.0	1183300.0	Santa Clarita	Raw GW	17	
Newhall CWD	1910096	6/3/97	Well No. 11	03N/16W-27J03 S	342300.0	1183300.0	Santa Clarita	Raw GW	12	
Newhall CWD	1910096	6/11/97	Well No. 11	03N/16W-27J03 S	342300.0	1183300.0	Santa Clarita	Raw GW	18	Lab analysis performed by HML
Newhall CWD	1910096	6/11/97	Well No. 11	03N/16W-27J03 S	342300.0	1183300.0	Santa Clarita	Raw GW	17	Lab analysis performed by HML
Newhall CWD	1910096	6/11/97	Well No. 11	03N/16W-27J03 S	342300.0	1183300.0	Santa Clarita	Raw GW	23	Lab analysis performed by Cal Lab Services
Newhall CWD	1910096	6/11/97	Well No. 11	03N/16W-27J03 S	342300.0	1183300.0	Santa Clarita	Raw GW	19	Lab analysis performed by Cal Lab Services
Newhall CWD	1910096	5/1/97	Well No. 12	03N/16W-35A01 S	342400.0	1183200.0	Santa Clarita	Raw GW	ND	
Newhall CWD	1910096	5/22/97	Well No. 12	03N/16W-35A01 S	342400.0	1183200.0	Santa Clarita	Raw GW	ND	
Newhall CWD	1910096	5/1/97	Well No. 13	1910096-006	342300.0	1183300.0	Santa Clarita	Raw GW	ND	
Newhall CWD	1910096	5/22/97	Well No. 13	1910096-006	342300.0	1183300.0	Santa Clarita	Raw GW	ND	
Newhall CWD	1910096	5/1/97	Well No. 7	03N/16W-02R01 S	342300.0	1183200.0	Santa Clarita	Raw GW	ND	
Santa Clarita WC	1910017	6/3/97	11600 block of San Fernando Rd.	NA	NA	NA	Santa Clarita	DW	16	Sampled at 1st service connection to Saugus Well #1
Santa Clarita WC	1910017	4/10/97	Honby Well	04N/15W-18N03 S	342600.0	1183000.0	Santa Clarita	Raw GW	ND	
Santa Clarita WC	1910017	5/22/97	Saugus Well No. 1	04N/16W-22K06 S	342506.0	1182506.0	Santa Clarita	Raw GW	21	
Santa Clarita WC	1910017	5/22/97	Saugus Well No. 1	04N/16W-22K06 S	342506.0	1182506.0	Santa Clarita	Raw GW	21	
Santa Clarita WC	1910017	6/3/97	Saugus Well No. 1	04N/16W-22K06 S	342506.0	1182506.0	Santa Clarita	Raw GW	16	
Santa Clarita WC	1910017	6/11/97	Saugus Well No. 1	04N/16W-22K06 S	342506.0	1182506.0	Santa Clarita	Raw GW	32	Lab analysis performed by HML
Santa Clarita WC	1910017	6/11/97	Saugus Well No. 1	04N/16W-22K06 S	342506.0	1182506.0	Santa Clarita	Raw GW	42	Lab analysis performed by Cal Lab Services
Santa Clarita WC	1910017	4/10/97	Saugus Well No. 2	04N/16W-22K10 S	342506.1	1182506.1	Santa Clarita	Raw GW	12	
Santa Clarita WC	1910017	5/1/97	Saugus Well No. 2	04N/16W-22K10 S	342506.1	1182506.1	Santa Clarita	Raw GW	14	
Santa Clarita WC	1910017	4/10/97	Stadium Well	04N/16W-23F01 S	342500.0	1183200.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	6/12/97	Well No. 157	04N/16W-22M01 S	342500.0	1183400.0	Santa Clarita	Raw GW	14	
Valencia WC	1910240	6/18/97	Well No. 157	04N/16W-22M01 S	342500.0	1183400.0	Santa Clarita	Raw GW	7	
Valencia WC	1910240	6/12/97	Well No. 159	04N/16W-33L01 S	342300.0	1183350.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	6/18/97	Well No. 159	04N/16W-33L01 S	342300.0	1183350.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	6/12/97	Well No. 160	04N/16W-21D01 S	342515.0	1183420.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	6/18/97	Well No. 160	04N/16W-21D01 S	342515.0	1183420.0	Santa Clarita	Raw GW	ND	

* Whittaker Bermite Site is not a drinking water system.

Santa Clarita Area Perchlorate Sampling

Utility Name	System Number	Sample Date	Sample Source	Primary Station Code	Latitude	Longitude	City	Sample Type	Perchlorate Results (µg/L)	Comments
Valencia WC	1910240	6/12/97	Well No. 201	04N/16W-21J01 S	342440.0	1183315.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	6/18/97	Well No. 201	04N/16W-21J01 S	342440.0	1183315.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	5/1/97	Well No. T-2	04N/16W-23A01 S	342500.0	1183125.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	5/1/97	Well No. T-4	04N/16W-23A02 S	342500.0	1183130.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	5/1/97	Well No. U-3	04N/16W-24A06 S	342515.0	1183010.0	Santa Clarita	Raw GW	ND	
Valencia WC	1910240	5/1/97	Well No. U-4	04N/16W-24B02 S	342505.0	1183030.0	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	6/26/97	Bldg No. 69 Ranch House Well	NA	NA	NA	Santa Clarita	Raw GW	27	
Whittaker/Bermite Site*	NA	6/26/97	Monitoring Well 1	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/9/97	Monitoring Well 1	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	6/26/97	Monitoring Well 10	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/9/97	Monitoring Well 10	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/10/97	Monitoring Well 10	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	6/26/97	Monitoring Well 3	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/9/97	Monitoring Well 3	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/10/97	Monitoring Well 3	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	6/26/97	Monitoring Well 5	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/9/97	Monitoring Well 5	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/10/97	Monitoring Well 5	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	6/26/97	Monitoring Well 6	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/9/97	Monitoring Well 6	NA	NA	NA	Santa Clarita	Raw GW	ND	
Whittaker/Bermite Site*	NA	9/10/97	Monitoring Well 6	NA	NA	NA	Santa Clarita	Raw GW	ND	

* Whittaker Bermite Site is not a drinking water system.

Date

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